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INSTITUTE

COLONY OF MAURITIUS

ANNUAL REPORT

OF THE DEPARTMENT OF AGRICULTURE FOR 1934

Printed by R. W. Brooks Government Printer, Port Louis 1935

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Annual Report of the Department of Agriculture for 1934

No. 184/34.

THE HONOURABLE THE COLONIAL SECRETARY,

I have the honour to submit the report on the agricultural conditions of the Colony and the work of the Department of Agriculture for the year 1934.

PART I

GENERAL REPORT ON THE AGRICULTURAL CONDITIONS OF THE COLONY AND THE WORK OF THE DEPARTMENT OF AGRICULTURE DURING 1934

1. *Meteorological conditions*

The past year was by no means a favourable one for the Sugar Industry of Mauritius as far as atmospheric conditions were concerned. Temperature was in defect throughout the growing season and drought conditions prevailed from November 1933 to the end of April 1934. On January 28th and 29th a moderate cyclone passed fairly close to the Island, no serious damage was done and practically all the rainfall received in January was associated with the passage of that disturbance. Such marked deficiencies on the part of vital factors at a critical period in the growth of the cane resulted in a disappointing crop.

The following figures indicate the temperature and rainfall conditions as observed at the Central Experiment Station, Réduit. More extensive information in this respect is given in the Appendix.

TABLE I

Station : Department of Agriculture, Réduit

Months and Years	Air Temperature °C	Departure from normal °C	Rainfall m/m	Departure from normal %
1933				
November	21.6	−0.1	15.1	− 71
December	23.2	−0.1	47.3	− 66
1934				
January	23.8	−0.3	275.6*	+ 4
February	23.9	−0.4	40.4	− 86
March	23.6	−0.1	59.1	− 81
April	22.5	—0.1	36.4	− 67
May	20.9	+0.4	170.2	+ 71
June	18.5	−0.1	84.4	− 5
July	18.0	+0.1	46.0	− 35
August	17.6	−0.3	56.8	+ 7
September	18.3	−0.3	56.6	+ 22
October	19.5	−0.2	23.2	− 53
November	21.8	−0.1	162.2	−208
December	24.0	−0.7	81.1	− 41

* 205.4 mm. fell on the 29th and 30th (cyclone).

The intensity of the drought will be gauged from the following table which exhibits the abnormality of the rainfall in the various localities of the Island during the season.

TABLE II

Percentage departure from average of the rainfall in the various districts of the Island

Months and Years	North 4 Stations	Centre 5 Stations	South 7 Stations	East 4 Stations	West 1 Station	Whole Island 21 Stations
1933	%	%	%	%	%	%
November	−69	−69	−79	−72	−100	−75
December	−71	−71	−74	−71	−5	−70
1934						
January	−14	+17	+18	+8	+17	+13
February	−73	−78	−71	−49	−96	−71
March	−78	−72	−68	−79	−90	−73
April	−70	−54	−71	−60	−61	−65
May	+135	+42	+19	+85	−29	+48
June	+40	+34	+46	+55	+9	+44
July	−24	−35	−16	−21	−5	−23
August	+17	+3	−45	−66	−76	−28

The discomforture of a short crop was further accentuated by market conditions which deteriorated during the year. The average net price for the 1933 crop was Rs 6.061 per 50 kilos including the extra colonial preference. For 1934 the average net price realized at the end of the year approximated to Rs. 6 per 50 kilos.

2. *Sugar production*

Had it not been for the late showers received in May and June, the sugar production of Mauritius might have fallen to the disastrous figure of 160 thousand tons. The actual production was, however, sufficiently poor, reaching only 178.86 thousand tons as against 261.46 last year. The shortage was especially pronounced in the Northern districts where the deficit was the largest since 1902. The following table exhibits the comparative production for the past seven years.

TABLE III

Yields of Sugar in thousand metric tons

Districts	1934	1933	1932	1931	1930	1929	1928
P/plemousses and Riv. du Rempart	30.13	57.77	62.73	41.81	43.00	54.68	59.55
Flacq ...	30.87	41.37	35.97	27.91	37.81	38.91	41.17
Moka ...	29.30	40.08	34.12	20.83	32.10	35.97	34.76
Plaines Wilhems ...	11.54	18.22	17.05	11.64	14.62	15.66	16.40
Black River ...	5.99	8.88	9.06	6.29	9.81	9.22	9.72
Grand Port ...	38.37	50.66	46.66	27.01	37.09	36.41	41.41
Savanne ..	32.66	44.48	41.63	28.52	46.53	47.18	50.42
Total ...	178.86	261.46	247.22	164.01	220.96	238.03	253.43

3. *Grades of Sugar*

The proportion of Raws was 78.76% of the total production, vesous were 20.56% while low sugars approximated to 0.68%. The change brought about by the introduction of the new English tariff in 1928 is well illustrated in the following table.

TABLE IV

Grades of Sugar 1925—1934

Years	Vesous %	Raws %	Lows %
1925 ...	98.21 ...	... ...	1.79
1926 ...	98.10 ...	... ...	1.90
1927 ...	98.63 ...	... ...	1.37
1928 ...	71.80 ...	27.30 ...	0.90
1929 ...	23.90 ...	75.20 ...	0.90
1930 ...	16.80 ...	82.50 ...	0.70
1931 ...	16.20 ..	83.10 ...	0.70
1932 ...	12.10 ...	87.50 ...	0.40
1933 ..	11.80 ...	87.70 ...	0.50
1934 ..	20.56 ...	78.76 ...	0.68

4. *Area under Sugar Cane*

At the beginning of 1934, the area under cane was estimated a 138,116 acres, or an increase of 4,249 acres on the corresponding figure for 1933.

Estates with factory, cultivated 59,227 acres; estates without factory, 38,459 acres, giving a total estate cultivation of 97,686 acres or 3,449 acres, above the corresponding figure for last year. The balance was made up by peasant planters, mostly Indian.

5. *Disposal of the 1933–34 Sugars*

The total quantity of sugar exported at the end of the 1933–34 export year (July 31st, 1934) was 250,829 metric tons, distributed as follows:—

Great Britain ...	250,134	metric tons
India ...	2	,,
Hong Kong ...	457	,,
Other Places ...	236	,,
Total ...	250,829	

The exportation for 1934–35, up to December 31st, 1934 was as follows:—

Great Britain ...	53,498	metric tons
Canada ...	6,401	,,
Hong Kong ...	681	,,
Other Places ...	148	,,
Total ...	60,728	

The local consumption of sugar for 1933-34 was 10,381 metric tons as against 9,111 metric tons for 1932-33.

6. *Labour Conditions*

Some labour difficulties were experienced in certain districts in connection with the harvesting of the crop. During the year Government appointed a committee to gauge the extent of unemployment in Mauritius. After enquiry, the committee concluded that there was no real unemployment in so far as unskilled and able bodied labourers were concerned; on the other hand, skilled artisans were often without work and measures were recommended to remedy the situation.

The cost of living, more especially as regards food stuffs, remained practically stationary during the year.

7. *Sugar Machinery*

Machinery to the value of Rs. 397,709 was imported during the year as against Rs. 504,719 last year; tractor parts, valued at Rs. 972 and ploughs, valued at Rs. 61 were imported as against Rs. 1,518 and Rs. 1,969 respectively last year. In 1934, tramway materials to the value of Rs. 280,557 were imported as against Rs. 287,371 in 1933.

8. *Fertilisers*

The importation of fertilisers totalled 14,970,515 kilos valued at Rs. 1,807,097 as compared with 20,495,353 kilos valued at Rs. 2,328,299 last year.

9. *Insect Pests*

The premier pest of the Island-*Phytalus Smithi*, Arrow, appears to be steadily diminishing in a number of areas. On the other hand it has increased in some districts. Mr. W. F. Jepson, B.Sc., A.R.C.S., who is employed by the Sugar Industry Reserve Fund to make a special study of the insect, completed a useful year's work, a full report on which has been furnished to the Chairman of the above Fund. In pursuance of his policy of introducing further parasites to deal with Phytalus Mr. Jepson has been requested by the Reserve Fund to visit Java, the Malay States, the Philippines and possibly some other countries This work will be commenced early in 1935. Several further promising parasites have been introduced from Madagascar.

The work of the Entomological Division has progressed; in particular, the investigations concerning Termites are, in an island like Mauritius, of particular economic importance.

10. *Plant Diseases*

Outstanding features of the year have been the inordinate activity of mosaic on tobacco in certain parts of the Black River District and the success of the initial experiments in controlling the dry side Rot of Pineapples. The menace of tobacco mosaic is on the increase and there

appears to be some justification in the theory of wild host plants of this malady. It has caused serious loss in this particular district. The examination of imported plant material occupies a good deal of the attention of the Officers of the Botanical Division.

11. *Tobacco Industry*

Some temporary difficulties in relation to the sale of leaf to local manufacture were experienced during the year.

In 1934 the acreage under tobacco approximated 982 acres as against 2,081 in 1933. The leaf purchased by the warehouse in 1934 amounted to 168,881 kilos as compared with 514,014 kilos in 1933. This gives an average yield per acre of 470 kilos as against 247 kilos during 1933. The monetary value of purchases by the warehouse was Rs. 541,403 in 1934 and Rs. 681,604 in 1933.

The industry remained in a flourishing condition but the increase in yield has meant that the Government Tobacco Warehouse now carries very large stocks; this spells drastic reduction in permits for planting during the coming year. The Tobacco Breeding Officer has accomplished some useful investigations and his report will accompany that of the Government Tobacco Warehouse in a publication separate from this.

Export is receiving full attention. Some seven tons of superior flue cured leaf were forwarded to test the London market. A small shipment of air cured leaf was likewise forwarded.

12. *Aloe Fibre*

Market conditions were slightly better during the year and as a result, exportation was perceptibly higher than during the previous two years. The total exported was 670 metric tons as against 422 in 1933 and 417 in 1932.

Owing to the slump in the jute bag market, the Mauritius Spinning and Weaving Cy found themselves in difficulties as regards the marketing of the local fibre bag; in consequence, a provisional closing down of the factory is contemplated.

13. *Pineapple Industry*

No progress is in evidence in relation to this industry. There was no extension in the area under Smooth Cayenne and, consequently, the Canning Factory has not been in a position to work on full load. The manufacture during the year totalled 2,443 cases of pineapple preserves of a value of Rs. 10,550 as against 5,281 cases of a value of Rs. 31,022 for the previous year.

The prices in London, which had dropped from 11/ to 7/6 per dozen tins, are now, according to the latest news, showing a tendency to rise.

In order to encourage planters, the Agricultural Department has recently reduced the price of plants from Rs. 3 to R. 1 per hundred.

The output from the Factory since its start is as follows:—

Years		Cases of Canned Fruit
1931–32	...	1,224
1932–33	...	4,982
1933–34	...	2,300

14. *Tea Industry*

This industry shows some progress and it is on a better footing now than since its creation.

A general tariff of 90 cents per kilo was imposed on foreign tea on the 10th of October last; the preferential tariff of 60 cents per kilo on British Empire grown tea was not altered.

The following shows the steady increase in production at Curepipe (Corson) Tea Estate:—

Years		Kilos
1930	...	5,582½
1931	..	8,713
1932	...	8,688½
1933	...	12,251½
1934	...	13,425½

The yield of tea at Bois Chéri Estate since it has been bought by Mr. L. Larcher was as follows:—

Years		Kilos	
1932–33	...	9,500	
1933–34	...	10,000	
1934–35	...	20,000	(estimated crop)

15. *Coconut Industry.*

The export of copra during the year amounted to 1,565 tons of a value of Rs. 161,687 as against 1,203 tons valued at Rs. 201,393 last year. The export of coconut oil during the year was 15,324 litres valued at Rs. 3,653 as compared with 4,385 litres last year, valued at Rs. 1,992.

16. *Alcohol*

The total quantity of alcohol distilled for human consumption amounted to 510,232 litres, as compared with 553,287 last year. The quantity distilled for industrial purposes was 441,620 litres as against 480,554 last year.

Owing to the pronounced fall in the price of petrol there was considerably less demand for Cernite (fuel alcohol) during the year.

The exportation of rum during the year was 35,325 litres, valued at Rs. 10,177 as against 36,489 litres in 1933, valued at Rs. 7,792.

17. *Veterinary and Livestock*

The improvement in cattle raising was well maintained during the year. The total horned cattle on Estates at the beginning of the year was 14,247 heads as compared with 13,260 last year.

Importation of cattle for food, from Madagascar, numbered 4,544 head during the year and 223 head for other purposes. The two Hereford Bulls mentioned in last year's report are giving general satisfaction.

The discovery by the Government Pathologist of *Trypanosoma vivax* amongst live stock in Mauritius is of very considerable interest. It is being thoroughly investigated with the assistance of the above mentioned officer.

18. *Co-Operative Credit Societies*

The progress evinced during the recent years has been well maintained. The process of weeding out those Societies in a hopeless condition has already commenced. On the other hand, one new society has been established and several others are in process of being formed. Members are at long last waking up to their responsibilities. A separate report is published on these Societies.

19. *Rodrigues*

The agriculture of Rodrigues, owing to a variety of causes, is not in an altogether flourishing condition. The whole question has been discussed with those who have an intimate knowledge of the Island as well as its inhabitants and, during the coming year, it is proposed to investigate the matter on the spot and, if possible, lay down a future policy.

The tobacco crop exceeded that of the previous year by 1,315 kilos and was sold at an advantageous price. This crop is developing in Rodrigues in a satisfactory manner.

General

I wish to record my appreciation of the assistance which I have received from the staff of the Department during the period under review.

Réduit,
April 12th, 1935.

G. E. BODKIN,
Director of Agriculture.

PART II

REPORT OF THE SUGARCANE RESEARCH STATION AND DIVISIONAL REPORTS OF THE DEPARTMENT OF AGRICULTURE

A full report of the activities of the Sugarcane Research Station for 1934 is published, as usual, in the form of a separate report, short exrtacts from the report of each Research Officer only being given here.

1. *Geneticist's Division*

The cane-breeding policy remained unchanged during the year, the extensive breeding of noble and nobilised glagah types being carried out at Réduit and Pamplemousses experiment stations as well as on certain estates where special facilities were granted. A summary of this breeding work as compared with that of the four previous years is given below. A considerable amount of time was given during the year to a detailed analysis of cane characters as observed in 1st year seedlings and identical characters as observed in the same clones in their 2nd and subsequent trials. At present such factors as Weight per Stool and Total Solids in juice as observed in new varieties are imperfectly understood but as they are the ultimate factors governing yield of sugar per acre it is essential that they should be studied in detail and their mode of inheritance determined if possible.

The results of those investigations are to be published shortly.

Summary of Cane-Breeding Programme, 1930 to 1934.

	1930	1931	1932	1933	1934
(1) Controlled crosses made, including selfings ..	409	355	457	466	421
(2) Uncontrolled crosses ...	569	370	46	1	0
(3) 1st Year seedlings raised in boxes	52,840	72,888	157,948	64,883	94,105
(4) 1st Year seedlings potted out for planting ...	20,108	29,363	35,863	26,032	28,318
(5) 1st Year seedlings distributed to estates for planting	3,000	5,000	16,040	3,645	4,550
(6) Mature seedlings from (4) and (5) above selected for testing in 2nd trials ...	233	263	252	not yet	...
(7) 2nd trial seedlings from (6) above selected for testing in 3rd trials	=1% 46	=1% 57	=1% 6*	selected ...	...
(8) 3rd trials seedlings from (7) above selected for testing in 4th trials	=20% 5* =11%	=22% ...	..	...	...

Variety Yield Trials.

Now that the supply of planting material of certain new varieties no longer presents the difficult problem that it did, larger sized yield trials, on the randomised block layout, have been established to replace the row trials previously laid down. In these new trials, two buffer rows, to be discarded at harvest, are established one on each long side of every plot so as to minimise, as far as possible the effect of varietal competition. Fourteen such trials were laid down during the year on experiment stations and estates. The results of the 14 variety yield trials harvested in 1934 are published in the full report of the Station.

*Not yet completed.

2. *Bio-Chemical Dirision.*

During the year, the chief lines of work under investigation in this division have been connected with soil properties and with manurial trials.

Of the former, the chief points investigated were :—

(1) the nitrification processes in soils of different types, both untreated and treated with lime and various fertilisers to which different nitrogenous compounds had been added. The effect of mixing subsoil with the surface soil has also been tested in this connection ;

(2) the separate effects of clay and organic matter on the base exchange properties of cultivated soils have also been investigated ;

(3) various aspects of the phosphate status of soils have been examined ;

(4) physical properties, particularly in respect to moisture relationships, together with swellings and cohesion have also been investigated.

Fourteen manurial trials have been reaped during the year, and although some have sufferred severely as a result of the prolonged drought during the earlier part of the year, several interesting results have been obtained. The question of border effect in manurial trials is also under consideration.

During the year, a number of articles have been published in scientific papers, three in foreign scientific journals and two in the "*Revue Agricole de l'Ile Maurice.*" Bulletin No. 4, "Some properties of the Sugarcane soils of Mauritius" has also been published.

3. *Physiological Divivion*

During the year the physiological division was mainly concerned with detailed investigations on the Root-systems of sugarcane varieties. The survey of the root-systems of cane varieties on one soil type is now complete. The next stage in the work will be to determine the effect of soil on the root system of some selected varieties. The root-system of over forty different varieties of cane have been investigated to date, three or four stools of each variety being examined. Several other aspects of rootwork have also been investigated in some detail, such as the effect of heavy phytalus infestation on root growth, the early development of the root-system of virgin canes, the formation of the root-system of ratoon stools ; observations on the growth of individual roots, and the length of life of root hairs

A bulletin describing in detail the results of the root work carried out to date, and their bearing on the practical agriculture of the sugarcane is now in the press.

A detailed investigation of the course of growth in sugarcane has also been carried out. In this work 25 complete stools of White Tanna were lifted at monthly intervals and detailed data on the growth of the stools and of their constituent organs recorded. It is believed that such methods shed light on the essential varietal differences between canes in their growth relationships, thus making it possible from the known data to select canes for particular conditions. This data is at present being analysed, and will shortly appear as a bulletin from this station.

In addition to those two main lines of work several problems of a minor nature, such as the control of arrowing in sugar cane, the germination of setts, the effect of soaking on germination and final yield of cane, have been investigated to some degree.

In particular, the beneficial effects of soaking in a lime-solution have been to a large degree elucidated, and explained. In conjunction with the Phytalus Investigation Officer, small scale field trials to test the resistance of different varieties to Phytalus have been laid down.

During the years two bulletins have been published, a third is in the press, and a fourth is practically ready to go to the press.

A. G. HILL—*Senior Geneticist*
N. CRAIG—*Bio-Chemist*
H. EVANS—*Physiological Botanist.*

AGRICULTURAL DIVISION

1. *Central Experimental Station, Réduit*

An additional multiplication plot was established to propagate new varieties of canes and other plants of economic interest; this will considerably facilitate rapid propagation and distribution of planting material to planters.

Cuttings of sugar cane, amounting in number to 41,183 were sold to Estates for Rs. 1,225.49 as compared with 17,189 cuttings sold for Rs. 515.67 in 1933. Sixty two tons of canes not required for propagation etc, were bought by Trianon Estate.

An experimental plantation of 100 *Hydnocarpus Wightiana*. Blume. (Chaulmoogra) was made and twenty five plants of *Acacia arabica*. Willd. (gum arabic) as well as twenty five *Prosopis juliflora*, D.C. (Algaroba) were planted in the same field.

A certain number of lowland species of Coffee flowered and fruited for the first time. Several fields at this station which have been bearing various crops for many years were planted with green manurial plants.

Pineapples, amounting to 2,096 kilos, were sold to the Mauritius Canning factory for Rs. 121. The sale of 3,800 suckers of the "Smooth Cayenne" pineapple to various planters amounted to Rs. 114.

2. *Royal Botanical Gardens, Pamplemousses Economic Section*

The cane multiplication plots at "Mon Plaisir" and "Mon Rocher" were harvested in September. Cuttings of the best varieties were sold to planters. Thirty eight tons of canes were bought by the neigbouring factories.

Plantations of selected varieties of yams, sweet potatoes, ground nuts, eddoes and tannias were made. A portion of the economic section was planted with pineapples, butter beans and maize for propagation purposes. Cuttings of various crops were supplied free to settlers on "Bois Marchand" Allotments.

A plantation of *Jatropha Curcas*, Lim. (Physic nut) was made at Mon Plaisir; this Euphorbiaceous shrub will be used as live supports for the Vanilla vines which are to be planted next year. The plantations of Areca nuts, coffee, Chaulmoogra and Pemba coconuts are growing well.

212 Mango grafts, 163 Letchis layers, 32 Lime layers and 19 Bread fruit suckers were supplied to Abercrombie Nursery. Eighty two Mango grafts were sent to Barkly Experiment Station. There are now under propagation 780 Mango grafts, 560 Letchis layers and 56 Lime layers. Abercrombie Nursery was supplied with a number of mango grafts, letchis layers etc.

The gardens were kept in a good condition throughout the year. Part of the Mon Plaisir Avenue was planted with a new species of palm *Areca Normambyi*, F. Muell, introduced a few years ago by the late Mr. Gabriel Régnard.

All the old and unsightly Vacoas trees, *Pandanus utilis*, Bory, in the Eastern boundary avenue were removed; this avenue was replanted with *Dictyosperma album*, H. Wendl an indigenous palm which is very hard and resistant to cyclones The somewhat irregular banks of the large pond were straightened and the edges neatly lined with stone borders. Two kiosks and three bridges, in bad condition, were pulled down and re-erected. A varied collection of flowering shrubs and trees were planted in different parts of the gardens. The ornamental plants in the green house received regular attention.

Plants and seeds were sent in exchange to the following Agricultural and Botanical Institutions:—

Director Institute of Plant Industry Leningrad U.S.S.R.
Station dEssai de l'Iveloina, Madagascar
Botanic Gardens, Gold Coast.
Havard University, Cuba.
Agricultural and Horticultural Society of India.
Director of Agriculture, Nyasaland.
Director of Agriculture, Tanganyika
Coffee Research and Experimental Station, Tanganyika.
Director of Plant Industry, Union of South Africa.

3. *Abercrombie Nursery*

A large number of ornamental and economic plants was raised in this Nursery. The following plants were sold:—164 Letchi layers, 161 Mango grafts and seedlings, 202 Citrus plants, 378 Palms, 1,819 Ornamental plants and 835 miscellaneous.

The revenue derived from the sale of plants amounted to Rs. 1,340.95

4. *Barkly Experiment Station*

Increased interest is being shown by members of the public; many visits were paid by planters and other persons during the year. The sales of the plants amounted to Rs. 1,550.90 Many seeds, cuttings and plants were supplied free to Government Institutions and to plot holders on the different allotments.

Plantations of various food crops were made in order to have planting material available for distribution whenever required. The orchard received careful attention, it is now stocked with a large collection of fruit trees, many of which have started bearing. New varieties of Olives, Apples and Japanese Persimmons (Khaki) were received from South Africa and are doing well. Seeds of *Hydnocapus wightiana* Blume, were collected and sent to the Chemical Division for oil extraction; this useful tree is being propagated as rapidly as possible.

Windbreaks of *Pithecolobium inguis-cati*, Benth, were established where it was found that plantations required protection from prevailing winds.

5. *Allotments*

At the beginning of 1932, at the request of Mr. Maurice Pitot, H. E. the Governor appointed an Allotment Committee to work out a scheme which would provide one acre plots for the settlement of unemployed persons willing to grow food crops. Land was obtained in the vicinity of Port Louis, Beau Bassin and Curepipe. A sum of five hundred rupees was voted this financial year (1934–35) to supply free timber, thatching material and to lay water pipes where it was possible to do so.

Many applications have been received for plots on the different allotments. The plot holders now number ninety six as follows:—

Malherbe ...	...	18
Curepipe	...	7
Floreal	...	2
Bois Marchand	...	24
Midlands	...	2
Barkly	...	43

Regular visits were paid to the allottees by Officers of the Agricultural Division and they were given advice on the cultivation of various crops. Free supplies of planting material were made by this Department. The majority of the allottees are giving satisfaction and are contented.

This scheme is capable of considerable extension, provided suitable land and money are obtained.

6. *School Gardens*

Regular visits are paid to the School Gardens throughout the year. Interest is maintained. Prizes were awarded to the best kept of these gardens as follows:—

1st	prize of	Rs. 45	to	Ruisseau Rose Government School	
2nd	„	35	„	L'escalier	„ „
3rd	„	30	„	Camp Diable	„ „
4th	„	25	„	Old Grand Port R.C. Aided	„
5th	„	20	„	Bambou Government School	
6th	„	15	„	Grand River S.E. Government School.	

7. Visits to Estates and planters

In order to maintain the existing liaison between the Agricultural Department and the planting community, the Senior Agricultural Officer paid forty five visits to various estates during the year. The Managers were interviewed and questions of agricultural interest discussed.

The Agronomist also visited regularly certain estates to superintend manurial trials with sugarcane and experiments with pineapples and tobacco.

The small planters who grow canes and other crops were often visited by the three Agricultural Instructors; they were given advice on many subjects, including the control of insect pests and plant diseases.

8. Export of Letchis.

As there are many letchis trees in the island and a large number of layers are yearly planted, it was suggested that a small export trade might be started, if the fruits could keep fresh in cold storage for at least one month in order to reach the London market in good condition. As a trial 5,000 selected ripe fruits from Barkly Experiment Station were properly packed in ton crates and forwarded on the 20th December care of Messrs Pearmain & Co. for shipment to London per S.S. "Garth Castle".

C. A. O'CONNOR,
Senior Agricultural Officer.

BOTANICAL AND MYCOLOGICAL DIVISION

1. Diseases of sugar cane. (Saccharum spp.).

Gumming (caused by *Bacterium vasculorum* (Cobb) G. Smith).

Several varieties of sugar cane, both imported and bred by the Sugar-cane Research Station, were planted in the gumming disease resistance trial.

At the end of the year under review the varieties planted in this trial at the end of 1932 and the beginning of 1933 were examined. Of 196 varieties tested 182 were found of sufficiently high resistance to warrant further propagation. The reaction of 25 varieties was doubtful, and they will be included in the resistance trial in 1935. The remainder were found to be too susceptible for further propagation.

Leaf Scald (caused by *Bacterium albilineans* Ashby).

Although at the end of 1933 the results of the experiment on scald resistance with varieties of known resistance or susceptibility in the field seemed to indicate that knife infection of cuttings was a promising method of testing resistance, further careful examination of the results tend to point to a contrary conclusion, as the varieties R. P. 8 and D. K. 74, which are known to behave quite differently to scald in the field, reacted to the disease in a similar manner in the experiment. Another conclusion drawn was that a variety may possess considerable resistance to ordinary secondary infection in the field, but that the cuttings will readily produce infected shoots through knife infection, which shoots either die early or apparently recover.

The experiment was repeated in 1934 with the same varieties, the source of inoculum employed being, however, the leaves and leaf sheaths of very young shoots instead of infected *stems*. A plot was also laid out with uninoculated cuttings. The experiment is still in progress.

2. *Diseases of Tobacco.*

Black Shank (caused by *Phytophthora parasitica* Dast. emend. Ashby) was fairly widespread during the warmer months of the year. The resistance trials laid down by the Tobacco Breeding Officer were closely followed. One strain of Amarello showed much less susceptibility than the others tested, and it is intended to make selections from this strain for further trials in 1935. Constant, Blue and two Florida varieties showed high resistance. The results of this trial were reported to the Government Tobacco Board.

Experiments were conducted at the Central Experiment Station on the effect of pen manure on the incidence of Black Shank. No conclusions could be drawn from this experiment as even the plants grown in infected soil remained healthy throughout their growth. This may be due to the lower temperature prevailing at Réduit than on the coast.

Mosaic.

Serious outbreaks occurred on two estates respectively in the Black River district. Experiments are in progress to determine the source of these outbreaks. In other parts of the Island the disease seemed to have been kept under control.

A disease characterised by the production of large, reddish brown, irregularly shaped patches on the leaves occurred on a few estates. Its cause is up to the present unknown.

3. *Diseases of other crops.*

Pineapples (*Ananas sativus* Schult).

Experiments on the control of the dry side rot of fruit reported in previous years by means of spraying with Sulphemulsol (an insect repellent and fungicide) were conducted at Montagne Longue. The results of this experiment held out some hope that the method will be useful in the control of the disease, but no definite conclusions can be drawn until the experiments are repeated.

Coconut (*Cocos nucifera*)

Stem bleeding and top rot associated with *Ceratostomella paradoxa* (De Seynes) Daden was reported at (Cannonier's) Point. Only a few cases of the disease occurred. The top rot seemed to be secondary to the stem bleeding disease.

Dictyosperma alba Wendl. ("Palmiste blanc")

What appears to be an infectious top rot of this palm was widespread on an estate in Flacq. The etiology of the disease is under investigation. In the mean time advice has been given to cut out and destroy affected plants.

Potato (*Solanum tuberosnm* L).

Outbreaks of bacterial will caused by *Bacterium solanacearum* E. F. S. occurred in several localities. The control measure recommended was careful selection of healthy "seed" tubers.

Many consignments of potatoes from abroad were found infected with powdery scab (*Spongospora subterranea*. (Wallr.) John). Infected shipments were desinfected with formalin. Infected tubers planted at Réduit gave rise to a healthy crop. It would seem that there is a climatic barrier to the disease in Mauritius.

Specimens of diseased timber sent in by the Forest Department were forwarded to the Imperial Mycological Institute for identification of the causative fungus, which seemed to be *Macrophoma* sp.

The more important diseases recorded for the first time during the year are as follows:—

White Rust (*Albugo* sp.) on a wild cruciferous plant (*Senebiera didyma* Pers)

Powdery Mildew (*Oidium* sp.) on garden Balsam (*Impatiens* sp.)

do do on *Linaria* sp.

do do on Potato (*Solanum tuberosum* L)

Collar rot of young Papaw plants (*Carica papaya* L.) associated with and probably caused by *Phytophthora* sp.

Leaf blight and stem rot of Carnation (*Dianthus Caryophyllus* L.)

Mummification of fruit of Raspberry (*Rubus rosaefolius* Sm.) associated with *Botrytis* sp. and *Peronospora* sp, probably caused by the former.

Spraying with Bouisol was recommended.

The work of collecting plants and building up of a herbarium was continued. The usual lectures and supervision of laboratory work in Botany and Mycology at the College of Agriculture were undertaken by the Botanist and Mycologist and, in his absence, by the Scientific Assistant.

4. Opportunity is here taken of placing on record the appreciation of the undersigned of the efficient manner in which the Scientific Assistant carried out the duties of Head of the Division during the eight months the former was acting as Director of Agriculture.

5. Towards the end of the year under review Mr. P. O. Wiehe B. Sc., A.R.C.S., who specialised in Botany at the Imperial College of Science, London, after completing his course at the local College of Agriculture, was attached to the staff of the Division as voluntary assistant. Mr. Wiehe assisted in the general laboratory work of the Division, especially in connection with studies on the side and crown rot of pineapples. He is also engaged on ecological studies, a branch of Botany in which he was particularly interested during his course at the Imperial College.

E. F. S. SHEPHERD,
Botanist and Mycologist.

SUGAR TECHNOLOGICAL DIVISION

1. *Visits to Factories, Investigations, etc.*

During the crop, the Sugar Technologist visited all the sugar factories with two exceptions, several of them in company with the Assistant Sugar Technologist. Advice was given and investigations carried out.

2. *Control of Pan Boiling.*

The dust seeding method of starting crystallization of sugar in the pan was applied in many factories with very good results. There is a saving in time and the crystals obtained are more regular.

The electrical conductivity apparatus for the control of pan boiling was installed in two factories. This apparatus proved very helpful to the pansmen and made possible the production of a masse cuite containing no false grains and the recovery of a higher amount of sugar with a better exhaustion of the final molasses. The technique of the method was investigated in Java by the Sugar Technologist in the course of study leave in May–July.

The adoption of the conductivity apparatus and the application of dust seeding are a great improvement in the technique of sugar boiling and will become a current practice in the Colony in a near future.

3. *Milling Tests.*

Brix tests were carried out in twelve factories with a view to determining the role of each unit in a tandem of mills. These tests can be quickly performed and have, in certain cases, facilitated the detection of weak units of the train.

A Cail crusher was installed in one sugar factory and proved very effective. The results obtained were satisfactory in spite of the poor quality of the canes crushed—they were short as a consequence of the drought.

4. *Controle Mutuel and Factory Results.*

Thirty two factories contributed to the "Controle Mutuel" and returns were regularly distributed fortnightly among contributors. Final figures obtained from the forty two factories showed that the average percentage of sucrose in the cane was 12.86, as compared with 13.24 and 13.04 in 1933 and 1932 respectively. The figures for the northern part of the Island were the lowest on record. This may be attributed to the severe drought followed by late rains and very short canes in which the "white tops" were relatively much longer than usual. On the average, the quality of the juice was below standard and very poor indeed in the northern districts. Crushing was difficult, the percentage of fibre in the cane being high. Sugar Extracted % cane reached 10.79, as compared with 11.26 and 11.01 in 1933 and 1932 respectively. The proportion of raws was 84.2%.

5. *Polarization of Raw Sugars.*

With a view to studying the change in polarization of raw sugars during storage, samples received from 26 factories were placed in small bags in a warehouse and monthly determinations of sucrose, invert sugar, moisture, etc., were carried out. The experiments will be continued during 1935 and conclusions published in due course.

6. *Educational.*

The usual duties in relation to teaching at the Mauritius Agricultural College were performed by the Sugar Technologist. For practical demonstrations, the students visited sugar factories repeatedly during the off-season as well as during the crop.

LOUIS BAISSAC,
Sugar Technologist.

VETERINARY DIVISION

The Government Veterinary Surgeon who was on leave from February resumed duty in October; during his leave in Europe this Officer obtained the degree of Doctor in Veterinary Science at the faculty of Medicine of Paris.

In the absence of the G. V. S., Mr. Lefébure acted in his stead.

1. *Importation of Animals.*

The following animals were imported during the year; their landing has been allowed after examination on board.

	From Foreign Countries		From Dependencies	
	1934	1933	1934	1933
Cows and oxen	4,767	6,237	715	86
Horses	24	14	...	6
Donkeys	...	...	...	...
Pigs	..	...	2,450	1,246
Sheep	63	348	713	581
Goats	...	...	4,156	1,998
Dogs	5	7	4	10
Turtles	...	25	...	14,506

Quarantine.

Eight dogs were placed under six months quarantine at the Government kennels and delivered subsequently to their owners except one which died before its delivery.

2. *Contagious Disease. Trypanosomiasis.*

7,382 blood smears were examined against 8,538 last year. A new type of Trypanosoma (Vivax) was discovered by the Bacteriological Laboratory. Cases of the new Trypanosomiasis were detected at :--

Highlands Estate	...	4 cases
Mon Desert	...	2 ,,
Bassin Road	...	1 ,,
Solferino	...	1 ,,
Total		8

Trypanosoma Evansi was detected in 24 animals amongst which there were four equines which were slaughtered according to regulations. Bovines were treated with Arsenic and Atoxyl with good results.

Red water.

An outbreak of the disease was recorded at Bel Ombre Estate. Out of 27 animals affected 16 recovered after adequate treatment with trypan blue.

Tuberculosis.

611 bovines were examined with 21 positive reactions.

B. C. G. Vaccine.

1,571 doses were delivered during the year under review as against 1,520 last year. The general condition of the herds is steadily improving as a result of application of this vaccine.

Poultry Diseases.

Some outbreaks of Fowl Cholera were recorded during the year throughout the Island, especially at Port Louis. Treatment (Solution of Carbolates) was recommended and results obtained were satisfactory.

3. *Abattoir Inspection.*

60 surprise visits were paid to the different abattoirs of the Colony. On two occasions seizure for tuberculosis was maintained. 71 cows and heifers under age were allowed to be slaughtered during that year.

College of Agriculture.

Lectures were delivered weekly to first and third year students.

F. E. LIONNET,
Government Veterinary Surgeon.

ENTOMOLOGICAL DIVISION

1. *Campaign against Phytalus Smithi Arrow.*

The method of hand collection of adult beetles at night is still employed against this pest. The parasites *Tiphia parallela* Smith and *Elis thoracica*, F. were not very common during the whole season; the severe drought which prevailed might to some extent have been a limiting factor.

At the request of the Committee of the Reserve Fund, an officer of this Division, Mr. P. Regnard, Assistant Phytalus Officer was detailed to proceed to Madagascar for search of other new parasites for *Phytalus Smithi* Arrow, and for the mass introduction into Mauritius of *Campsomeris pilosella* Sauss. the scolid wasp first introduced in 1932. As a result 39,000 *Campsomeris pilosella* Sauss. were introduced together with 500 individuals of a new Tachinid fly. These parasites were received, colonised and liberated in various infected centres by Mr. W. F. Jepson B.Sc., A.R.C.S., the Phytalus Investigation Officer.

2. The red-wing locust: *Nomadacris septemfasciata* Serv.

This insect pest was very rare this year and did very little damage to cane plantations. It is worth recording that the Mynah bird (*Acridotheres tristis* L.) was very common in the various localities previously heavily infested. A first consignment of pupae of *Woldfahrtia euritatta* Villen., was received from the Chief Entomologist of the Department of Agriculture, Pretoria; but unfortunately none of the parasites emerged.

3. The spotted borer: *Diatraea venosata* Walk

Cane plantations in nearly all localities were very severely attacked by the spotted borer *Diatraea venosata* Walk. In the lowlands and dry districts the damage was more severe; the reduction in the fields reaching in some cases 62–75%. The severe drought which prevailed during some months of the year was very favourable for the breeding of this insect pest. The cane variety B.H. 10/12 was particularly severely attacked by the spotted borer in all the coastal regions of the Island.

4. The White Grub: *Oryctes tarandus Ol.*

Sporadic outbreaks of this insect pest occurred in some cane plantations in the Southern part of the island. The dry season experienced in these localities rendered the attacks of this insect pest more apparent this year. In the preceding years this has undoubtedly been overshadowed by the good meteorological conditions, favourable to better plant growth and resistance.

5. The Cucurbit flies: *Dacus emmerezi* Bez. and *Dacus ciliatus* Lwe.

These two flies are decidedly serious pests of cucurbitaceous plants in Mauritius. Poisoned syrup or sugar solution with lead arsenate has given some fairly satisfactory results. At the time of writing, another

consignment of the Braconid parasite *Opius phaeostigma* Wlkn., has been received from Dr. Naude, the Chief Entomologist of the Department of Agriculture, Pretoria The very few specimens received alive are at present under observation.

6. The lawn cut-worms: *Crambus emmerezellus* de Joan.

As in the preceding years, this pyralid moth continued to be a serious pest of lawns. The systematic application of a petrol emulsion (formula as given in Department leaflet No. 36) has proved very useful against this insect pest.

7. The Cutworms: *Prodenia litura* F., and *Spodoptera mauritia* Bdv.

A recrudescence of these two insect pests were reported in various places in the island. Their attacks were not severe in the dry and hot localities. The Minah birds, *Aeridotheres tristis* L. were very common in all the infected centres; their presence no doubt exerted some check on these insect pests. An ichneumonid parasite, not yet identified was also found, in smaller number, attacking larvæ of these two pests. Poisoned bait made up of sliced cactus stems and sodium fluoride gave some very satisfactory results.

8. Termites.

A general survey of the termites of Mauritius has been carried out, with the result that this fauna has been enriched by the following species recorded for the first time in Mauritius viz: *Coptotermes* sp. near *intermedius* Silv; *Heterotermes philipinensis* Light; *Prorhinotermes canalifrons* Sjost and *Procryptotermes* sp. nov.

9. *Publications.*

The following articles, notes or studies were prepared during the course of the year (a) Notes sur les principaux insectes nuisibles à la canne à sucre (b) The Commoner insect pests of orchards, garden and vegetable plants in Mauritius (c) Upkeep, diseases and pests of lawns in Mauritius (d) Termites in Mauritius.

10. *General Activities of the Division.*

The Assistant Entomologist remained in charge of the Division. Lectures and practical demonstrations in Agricultural Zoology and in Entomology were delivered by the Assistant Entomologist to students of the first and second year of the College of Agriculture.

Officers of this Division paid a number of visits to various estates and small planters; advice and demonstration respecting the methods of control were duly given to those concerned.

The Scientific Assistant and the Chief Phytalus Officer (for a certain period only) were detailed one day per week for the examination of plants, seeds and fruits at the Customs.

ANDRÉ MOUTIA,
Assistant Entomologist.

CHEMICAL DIVISION

1. *Investigational work* (*Chemical composition of rain water*).

During the year under review, rain water was systematically collected at different places,—so as to cover the whole area of the island and the chemical composition of these samples was determined every month. A period of one year has been arranged so as to ascertain the monthly variations; this experiment is still in hand.

The following preliminary data show the variations in the figures expressed in parts per 100,000 parts.

Chlorine	...	1.2	6.0
Ammoniacal Nitrogen	...	nil	0.26
Nitric Nitrogen	...	nil	2.00
Temporary Hardness	...	0.3	2.0
Permanent Hardness	...	4.0	5.9

Chaulmoogra Oil.

The Chaulmoogra oil extracted from the seeds of Hydnocarpus Wightiana grown in the island has shown comparison (from a chemical point of view) with the oil now used in the local leper hospital. The yield of oil is rather high. The crude oil was purified chemically. Samples will be sent to London for expert report.

Camphor.

A further series of experiments regarding the yield of solid camphor under industrial conditions has been carried out. The yield of 1.4 solid camphor per cent of leaves and twigs obtained was considered quite satisfactory.

Milk.

The analysis of milk from the Goveryment Dairy was carried out during the month of May. The butter fat varies from 3.0—4.6% and the solids not fat was approximately 8.5%.

Rum.

A sample of each consignment of rum was forwarded from the General Warehouse to be analysed according to Ordinance 18 of 1933. All rums suspected to be illicitly produced were forwarded by the Police Authorities and analysed accordingly. 342 samples were analysed during the year under review.

Dadap (*Erythrina*) *seeds*

This leguminose is planted locally for green manuring purpose. The seeds were tested in order to ascertain the absence of cyanide compounds if to be used as food for cattle.

Soil.

A soil survey on a small scale was undertaken on a sugar estate in the southern district at the request of the manager. A report was submitted accordingly.

2. *Routine Analysis.*

737 samples were received on which 1,739 estimations were performed.

3. *Education.*

No change in the lecturing duties occurred.

4. *Miscellaneous.*

Mr. R. Lincoln and Mr. F. Berchon had been in charge of the rum control and in this connection had to appear in Court as Government experts.

R. LINCOLN,
Chemist.

TOBACCO DIVISION

1. *Tobacco Station. La Ferme.*

Manurial Experiments. These experiments were continued during the year and were almost completed at the end of the year. This concludes the series and when the final results are ready it is proposed to draw a full report on this series of experiments which have been conducted during the past three years.

Variety Trials.

Trials were conducted during the year with the following varieties:— Yellow Pryor, Hickory Pryor, Hector, Cash, Flanagan, White Stemmed Orinoco, Narrow Leaf Orinoco, Warne, Harrison Pryor Resistant, White Burley Resistant, Constant and Blue.

Black Shank disease (Phytophthora sp) caused the abandonment of the trial with Yellow Pryor but all the other varieties are worthy of further trials and efforts will be made to test them on a larger scale.

Amarello selection trials.

Special selection work was continued with this variety during the year and the results obtained are being published in bulletin form.

2. *Barkly Experiment Station.*

Variety Trials.

Trials were conducted with the following varieties at this station during the year:—Cash, Flanagan, White Stemmed Orinoco, Narrow Leaf Orinoco, Warne, Harrison Pryor Resistant, and White Burley Resistant.

Amarello selection trials.

These trials were continued at this station as well as at La Ferme and the results are to form the subject of a bulletin.

Black Shank resistance trials.

Various varieties and strains were tested for their resistance to Black Shank during the early months of the year and seeds obtained from selected plants have been sown for a further test.

All the variety trials, Amarello selection trials, and Black Shank trials have been in the charge of the Tobacco Breeding Officer, who has submitted separate reports thereon to the Government Tobacco Board.

3. *Buildings and Roads.*

The buildings at the Tobacco Station have all been kept in good state of repair and painted during the year. The roads in the station have been improved and the wall surrounding the station repaired.

4. *Disease.*

During the early months of the year and the later months, Black Shank (*Phytophthora sp.*) was reported from all districts. Mosaic disease was very severe on some estates in the Black River district and isolated cases were reported from all other districts.

5. *General.*

The drought experienced, particularly in the early months of the year, restricted planting in the majority of districts but this in a large measure was counterbalanced by the late rains. Those estates, however, which had to rely on irrigation water had to restrict their planting considerably and in a large number of cases were unable to complete their plantations.

The figures relative to acreage under cultivation production and consumption are dealt with in detail in the report of the Government Tobacco Board.

GEOFFREY CORBETT,
Government Tobacco Officer.

GOVERNMENT DAIRY

1. *Yield of Milk.*

82,993 litres of milk were produced during the year as against 113,241 litres in 1933. The milk was disposed of as follows :—

	1934	1933
Supplied to Government Hospitals ...	6,824	40,670
Supplied to the Public	72,766	65,262
Fed to calves	3,040	4,410
Samples for control	363	393
Rejected on account of Surra	...	2,506

Although the price of milk was maintained at 22 cents per litre—as compared with 12—15 cents for the local ordinary milk—yet the amount supplied to the public has continued to increase. This tends

to indicate that the standard of quality of the Dairy milk is adequately appreciated by the public and it is gratifying to record that the "clientèle" comprises members from all classes of the community.

2. *Expenditure and Revenue.*

The statement of expenditure and revenue for the year stands as follows :—

Expenditure	Rs. c.	*Revenue*	Rs. c.
Grain ...	7,809.65	Milk sold to Hospitals	2,343.00
Fodder ...	6,255.40	„ „ Public	15,824.11
Litter ...	1,887.00	Sale of Manure ...	3,197.47
Repairs and Renewals	708.18	„ Stock ...	1,402.00
Salaries and Wages ...	3,020.00		
Other Charges ...	1,804.57		
Cost of delivery of milk	2,540.00		
Total Rs.	24,025.10	Total Rs.	22,766.58

It should be remarked that the above statement combines the second half of one financial year with the first half of the next.

3. *Births*

31 births were recorded : 14 females and 17 males.

4. *Deaths.*

Three cows died during the year, one from metroperitonitis as a sequel of abortion ; one from enteritis ; one from antepartum paralysis.

5. *Sales.*

21 calves were sold to breeders ; 8 cows were discarded as unfit for reproduction and sold to the butcher.

6. *Abortion.*

Nine cases of abortion were recorded as against four last year.

7. *Surra.*

Exhaustive blood tests having been carried out with negative results, the cows which had suffered from surra in the previous year were released from quarantine in February 1934.

8. *General Remarks.*

Milk samples were periodically analysed both by the Chemical Division and the Bacteriological Laboratory ; in each case it was found that the usual high standard of Grade A was being maintained. The animals were also subjected to their annual tuberculin test and as in previous years the results proved negative.

Y. LEFÈBURE,
Officer in charge.

CO-OPERATIVE CREDIT DIVISION

1. *Administration.*

Mr. G. E. Bodkin, Director of Agriculture and Registrar Co-Operative Credit Societies was absent from the Colony from the 18th February until the 25th October; during his absence Mr. E. F. S. Shepherd, Botanist and Mycologist, officiated as Registrar Co-Operative Credit Societies.

Mr. Burrenchobay, the whole time Inspector, was appointed to the newly created post of whole time Assistant Registrar on the 27th December, 1933. He was succeeded by Mr. I. Madhoo, a First Grade Clerk in the General Clerical Service as from the 1st October last.

Mr. A. Valasois, additional Inspector, went on leave on the 10th June and was replaced by Mr. G. Bauristhène, Agricultural Instructor, until the 16th November.

Mr. E. Bedsy, acted as additional Inspector throughout the year.

2. *Capital.*

The total working capital of the societies which last year stood at Rs. 300,392, was Rs. 268,665. The decrease was mainly due (i) to the withdrawal of shares by members having no agricultural interest, (ii) to the attachment of the shares of debtors towards partpayment of their debts whilst writing off such debts, (iii) to the dissolution of the Piton Poudre d'Or Co-Operative Credit Society.

3. *Government Advances.*

Advances totalling Rs. 250 were repaid to Government by the Societies, and an advance of Rs. 1,500 was made to the Surinam Souillac Co-Operative Credit Society from State Funds. The amount still due to Government by the societies on the 31st December, was Rs. 2,900.

4. *Reserve Fund.*

The total Reserve Fund of the Societies was 3.3 times the value of the shares contributed by the members.

5. *Dissolved Societies.*

Following the dissolution of the Piton Poudre d'Or Society, the number of dissolved societies which last year stood at nine, was ten. Liquidation proceedings in the case of any of these societies have not yet been closed.

6. *Societies, Dividend and Interest.*

The number of societies in operation in the Island, on the 31st December was 28. Two applications for the registration of a society were received from the agriculturists of Lalmatie, St. Julien, Gokoola and

Piton respectively. It is proposed in the first instance, to undertake the education of these agriculturists in co-operative principles before registering these societies.

During the year two societies declared a dividend as follows :—

Eastern Triolet 10% on shares. Corps de Garde 5% on shares.

The rates of interest on loans to members charged by the societies ranged from 6 to 12%.

7. *Loans to members and Recoveries.*

The total of loans issued during the year as well as the standard of recoveries were lower than those of last year. This was mainly due to the damages caused to the plantations by the severe drought which prevailed. As in the previous year, the societies have continued to devote their attention chiefly to the grant of loans for cane cultivation, and in a few cases for tobacco, vegetables and other food crops.

8. *General Meetings.*

Extraordinary general meetings of 12 of the societies were held during the months of January and February, and the annual general meetings of all the societies were held in July. At these meetings the books of the societies were closely scrutinized by the Registrar. At the same time the debtors present were minutely examined as to their exact financial position. Letters reviewing the affairs of the society and advice given were sent to the President of each society. In some cases programmes of the work the committees of management had to do were also sent

9. *Demonstration Plot.*

The Demonstration Plot started by the Saint André Society, last year, was maintained. No other plot was started by any of the remaining societies.

10. *Amendment of Co-Operative Ordinance.*

With a view to effecting greater efficiency in the administration of these organisations, and to checking of abuse of authority by some of the members in granting debtors undue extension of delay to pay their debts, in virtue of the powers conferred upon the committee under subsection 14 of Article 11 of the Rules governing the working of these organisations, the subsection referred to above as well as subsection 12 of the said Article were amended pending the general revision of the Rules and certain Sections of the main Ordinance.

11. *General.*

The activities of the personnel of the division were confined to consolidating the position of the movement by collection of the overdues, reconstituting the bad societies, and to educating the members of the societies in the principles of co-operation and particularly in the

responsibilities of the Committee and the members generally for the working of their societies. Members are being taught to realise that they should watch each other's operations and submit to having their operations discussed freely and openly when applications for loans etc. come before the Committee.

In this connection the Inspecting Officers have been in constant touch with the office bearers and the members, till late in the afternoon and even on Sundays.

The general condition of the societies which last year, showed some marked improvement as a result of the adoption of the procedure referred to above has, following the severe drought plus the very low prices of sugar, been affected to a large extent, in so far as the recoveries are concerned. Nevertheless it is satisfactory to observe that at no time since the introduction of the movement in the Colony, has there been so much attention paid by the members of the committees in particular, and the shareholders in general towards the improvement of the management of their societies. It is safe to add that the members now appear to begin to realise the true advantages derivable from credit societies.

The work of these societies forms the subject of a special annual report issued in August. The details of the working thereof for the financial year ended 30th June 1934, are shown in the annexures to such report.

M. BURRENCHOBAY,
Assistant Registrar,
Co-Operative Credit Societies.

RODRIGUES

1. Climatic Conditions :—*Rainfall.*

	Oyster Bay		Solitude		La Ferme	
	Inches	Rainy days	Inches	Rainy days	Inches	Rainy days
January ...	3.48	17	4.14	17	2.18	6
February ...	5.75	18	3.98	15	5.20	11
March ...	4.21	20	3.43	15	4.67	8
April ...	2.65	12	3.15	16	2.06	6
May ...	5.33	16	4.33	17	6.15	9
June ...	2.02	12	2.52	15	1.55	6
July ...	2.64	19	3.16	20	2.29	10
August ...	4.07	19	3.62	23	3.42	12
September ...	2.46	19	2.98	16	3.82	14
October ...	1.25	7	1.22	9	.85	2
November ...	.87	7	1.49	11	.98	3
December ...	2.22	7	2.14	6	.99	7
	36.95	173	36.16	180	34.16	94

Highest rainfall in one day.

Oyster Bay.	On the 28th February :	2.81	Inches.
Solitude	„ 31st December :	1.46	„
La Ferme	„ 27th February :	1.67	„

General Conditions.

Owing to the dry weather conditions which had prevailed at the end of 1933, a shortage of food crops was experienced at the beginning of 1934 and men had to be employed by Government on Relief work.

Plantations have been made in January. Although the total rainfall obtained has been again under the average for the last ten years the distribution was excellent and consequently favourable for agriculture.

No serious damage was done by the two cyclones which occurred on the 6th January and 28th February respectively. No heavy rainfall having been recorded since April 1933, water was somewhat scarce in the rivers and springs have started to dry up since the month of September. The animals in the Catttle Walk suffered somewhat from a lack of good drinking water. Conditions of grazing were upon the whole satisfactory all the year round. At the end of December authorization was given to the breeders to keep their cattle unfenced during the night.

Crops such as maize, sweet potatoes, manioc, beans, garlic, onions, yams, eddoes and coffee have all done well and remunerative prices were obtained. Manioc suffered from disease to some extent.

Tobacco.

Increased interest has been aroused among planters in the question of the plantation of good varieties of Tobacco. There has been a great demand for seeds of the new varieties introduced by the Agricultural Department. Those varieties showed again an increased area under cultivation. Owing to lack of sufficient rainfall at La Ferme the plantations had to be made late in the season. Caterpillars have been a serious pest on this crop and the leaves have also been damaged by the strong winds prevailing in July and August. The results were not very satisfactory as far as the quality of the leaf is concerned. A tobacco press has been erected at Baie du Nord to facilitate the handling and transport of the tobacco bales. There is every prospect that very shortly the tobacco industry will be established on a sound basis, in Rodrigues. In 1934 4,584 kilos of leaf were sold to the Tobacco Warehouse, in Mauritius, for Rs. 2,899. In 1933 2,869 kilos were similarly disposed of for Rs. 1,282.

Acacia (leucaena glauca) has been largely collected all the year round and found a ready sale at rather good prices.

2. *Livestock.*

Marked improvement is noticeable in the breeds of livestock. Some breeders are paying close attention to the selection of their breeding animals. The stud animals kept at the Stock Farm of the Agricultural Department have been greatly appreciated. The loan of these to breeders have been continued and a great number of cows, sows and ewes to be sired were received at the Stock Farm. Chickens and ducks have done well. Some difficulties have been met with in the rearing of young guinea fowls. Investigations to find out the cause are being carried out.

Experiment Station and Stock Farm.

The buildings, roads and fences of the Experimental Station and Stock Farm were maintained in good condition. A new pig sty 48' x 10' and two new poultry runs have been built. A new orchard has been created on the south east of the Station. The routine work of the Experimental Station was continued. Regular distribution of planting material from the promising varieties of crops grown at the Experimental Station has been made. New varieties of fruit trees were introduced.

The animals of the Stock Farm were maintained in good condition. Two mare boars were kept with a view to stationing them in localities far distant from Oyster Bay.

In the Demonstration Plots, coconuts have done well. The plantations of coffee at Oyster Bay, although carefully tended to, has not made satisfactory progress. The locality does not seem to be well adapted for the growing of that crop. The plantation of vanilla has been extended and an increased yield has been obtained this year.

4. *Agricultural Education.*

The holdings of planters have been regularly visited and advices were given as to the best cultural methods to be employed. Intensive efforts restricted to limited areas have proved to give satisfactory results. The children have taken interest in the practical work at the School gardens at Lataniers. Very little could be done at La Ferme. Another site will have to be selected as a new school has been built on part of the grounds of the garden existing there.

5. *Exports.*

Acacia seeds (leucaena)	*7,429	bags
Beans	896	,,
Maize	2,198	,,
Peas	2	,,
Garlic	534	,,
Onions	42	,,
Trepang	12	,,
Mushrooms	3	,,
Gum	3	,,
Tobacco	107	bales
Salt Fish	3,002	,,
Cuttle Fish	939	,,
Hides	3	,,
Manure about	975	tons
Timber	14	bundles
Salted lemons	1	case
Pumpkins	51	pieces
Cattle	731	
Sheep and goats	219	
Sheep	677	
Goats	3,511	
Dogs	16	
Pigs	2,172	
Chickens and ducks	24,072	
Turkey	199	

* 6,683 bags to Mauritius and 746 to Reunion.

6. *Trèfles Co-Operative Society.*

The Co-Operative Society has continued to work during the year. The repayments of the loans have been rather slow owing to the fact that most of the members were pretty hard up after the drought experienced at the end of 1933. Since August the repayments were normally effected.

7. *Forestry.*

Forest Guards Brunet and Monty were transferred to Mauritius and were replaced by Forest guards Lecordier and Chatton.

Forest guard Lecordier was granted one month leave and left Rodrigues on the 20th of December. The sale of forest produce amounted to Rs. 2,035.97 cts.

RE-AFFORESTATION

1,975 *Casuarina equisetifolia*, Forst., 3,905 *Terminalia catappa*, Linn., 117 *Juniperus bedfordiana*, Hort., 300 *Eriodendron anfractuosum*, D. C., 399 *Poinciana regia*, Bej., 75 *Elaeocarpus serratus*, Roxb. and 2,150 *Casuarina equisetifolia*, Forst. were planted.

The young trees have done well and the plantations have been regularly and carefully tended to.

RENÉ JAUFFRET,
Agricultural Superintendent.

PART III

1. *Staff movements.*

The Honourable G. E. Bodkin, Director of Agriculture, proceeded to Europe on leave of absence on the 19th February. He was replaced by Mr. E. F. S. Shepherd, Botanist and Mycologist, and the latter by Mr. G. Orian, Scientific Assistant. The Director resumed duty on the 26th October.

Mr. F. E. Lionnet, Government Veterinary Surgeon, left on leave of absence for France on the 10th February. During his absence Mr. Y. Lefébure, Stock Inspector, acted as Government Veterinary Surgeon. Mr. Lionnet returned from leave on the 13th October.

Messrs A. Valasois, Assistant Agricultural Officer, and A. d'Emmerez de Charmoy, Scientific Assistant, proceeded on leave to Europe and Reunion respectively on the 11th June and 26th November.

Consequent on the appointment of Mr. Burrenchobay as Assistant Registrar Co-Operative Credit Societies, on the 27th December 1933, Mr. L. A. Madhoo, Clerk Grade I, Treasury, was appointed Inspector Co-operative Credit Societies, on a provisional basis from the 1st October.

Mr. R. Rivalland, Junior Scientific Assistant Chemical Division, was appointed Agricultural Instructor on the 1st January, Mr. R. Mamet was selected to fill the vacant post in the Chemical Division from the 1st February.

At the request of the sugar Industry Reserve Fund Committee Mr L. Baissac, Sugar Technologist, was granted a study leave of three months to proceed to Java with the object of studying electric conductivity control of pan boiling. He left the Colony on the 11th May and returned on the 4th August. During his absence Mr. R. Avice acted as Sugar Technologist.

Mr. P. Reguard, 2nd Phytalus Officer, was seconded for mission in Madagascar in connection with Phytalus parasites. He left the Colony on the 3rd June, returned on the 1st October and again left on the 26th November.

2. Stations.

The headquarters, offices and laboratories of the Department of Agriculture are located at Réduit some 1,000 feet above sea level. The following principal areas of land are utilised and controlled by the Department for experimental field work in all its various phases:— Réduit, 32.81 arpents; Barkly (altitude 700 feet) 13.7 arpents; Mon Plaisir, Pamplemousses (altitude 220 feet) 9.62 arpents; La Ferme (altitude 420 feet) 12.82 arpents. A number of minor areas in different parts of the Island are leased or occupied rent free for experimental work principally in connection with sugar and tobacco. The local "arpent" is slightly greater than the English acre.

3. EXPENDITURE AND REVENUE

Expenditure

	Rs. cs.
Department of Agriculture:—	
Personal Emoluments	227,619.20
Maintenance of Gardens	5,797.52
General Services	928.53
Prevention of Plant Pests and Diseases ..	1,242.26
Prevention of Animal Diseases	833.41
Upkeep of Stock	1,912.73
Travelling Expenses	11,724.21
Maintenance of Experiment Stations... ...	14,159.80
Apparatus, Chemicals and Laboratory Supplies ...	2,653.49
Nursery for the distribution of Economic Plants ...	2,827.51
Destruction of Phytalus Smithi	68,247.61
Services rendered by the Railways	1,993.42
Telephone Charges	504.51
Registration of Agricultural Chemists ...	7.00
Upkeep of La Ferme Tobacco Experiment Station ...	4,541.48
Passages	5,395.83
Government Dairy	24,025.10
British Industries Fair	2,254.11
Purchase of a Bull	2,242.36
Purchase of a Typewriter	316.73
Sugarcane Research Station:—	
Contingencies	384.32
Laboratory Equipment	2,740.76
Travelling Expenses and Services rendered by the Railways	1,715.72
Labour and Field Equipment	9,969.33
Total	Rs. 393,136.94

REVENUE

	Rs. c.
Sale of Plants	3,813.59
„ Sugar cane	4,053.35
„ Tobacco leaf	1,588.53
„ Pineapple Suckers	415.27
„ Soamin	36 00
„ B. C. G. Vaccine	1,121.50
„ Produce from Government Dairy	22,766.58
„ Pois Muscat	601.30
Contribution from Co-Operative Credit Societies ...	745.00
Analytical fees	411.00
Miscellaneous	240.09
Contribution from Agricultural College Funds towards cost of Sugarcane Research Station	18,000.00
Contribution from Agricultural College Funds towards salaries and allowances of Officers of the Department of Agriculture	23,950.00
Contribution from Agricultural College Funds towards pension of lecturers at the Agricultural College ...	6,360.00
Contribution from Agricultural College Funds towards Phytalus Smithi Campaign	10,000.00
Special cess on sugar exports for Phytalus destruction (Ordinance No. 38 of 1933)	68,228.24
Total	Rs. 162,330.45

The expenditure and receipts shown above are in respect of the Calendar year 1934. The official financial year in Mauritius runs from July 1st in one year to June 30th in the following year. The pound sterling is equivalent at present to Rs. 13.33.

4. *Legislation.*

The following Ordinances, Proclamations and Notifications were issued during the year.

Proclamation No. 2 of 1934. To remit stamp duties and registration fees chargeable on instruments executed by or on behalf of " The Surinam Souillac Co-Operative Credit Society."

Proclamation No. 3 of 1934. To declare all lands planted with Tobacco within the Island of Rodrigues infected with Mosaic disease.

Ordinance No 3 of 1934. To amend the Tobacco Production and Marketing Ordinance, 1930.

Government Notification No. 11 of 1934. Regulations made under the Tobacco Production and Marketing Ordinance 1930, as amended by the Tobacco Production and Marketing (Amendment) Ordinances 1931, 1932 and 1934.

5. *Board of Agriculture.*

The Board of Agriculture established under Ordinance 30 of 1912 consists of :

His Excellency the Governor—*President.*
The Director of Agriculture—*Vice-President.*
The following members were appointed for 1934 :—

The Hon. M. Martin, C.B.E.
„ J. Leclézio, C.B.E.
„ P. Montocchio
„ R. Gujadhur
Captain H. G. Hitchcock, O.B.E.
Mr. R. M. Monk
„ Tristan Mallac
„ G. Antelme
„ G. Clarenc
Mr. J. de Spéville
„ L. H. de Froberville
„ H. G. Ducray
„ Georges Mayer
„ Pundit Bolaram
„ Pierre de Sornay
„ F. A. Nichols
„ H Lincoln
„ Pierre Hugnin.

6. *Publications.*

The following departmental publications were issued during the year :—

Bulletins. (*a*) Diseases of Garden Plants and Fruit Trees.
(*b*) The Commoner Insect Pests of Orchards, Vegetable and Flower Gardens in Mauritius.
(*c*) Sugarcane Research Sattion Bulletin No. 3. Some Preliminary Data concerning the best shape and size of Plot for Field Experiments with Sugarcane.
(*d*) Sugarcane Research Station Bulletin No. 4. Some Properties of the Sugarcane Soils in Mauritius.
(*e*) Sugarcane Research Station Bulletin No. 5. Studies on Root-Exudation and Root-Types in Sugarcane.
(*f*) Sugarcane Research Station Bulletin No. 6. Investigations on the Root System of sugar cane varieties.
Leaflet. Notes on the upkeep, Diseases and Pests of lawns in Mauritius.
Reports. Annual Report of the Department of Agriculture for 1933.
(*b*) Report on the operation of the Phytalus Smithi, Arrow, during the season 1933–34.
(*c*) Report on the working of the Co-Operative Credit Societies for the year ending 30th June 1934.
(*d*) Final Production figures for the year 1933–34 sugar campaign.
(*e*) Preliminary Forecast of the Sugar Production for the 1934–35 Sugar Campaign.
(*f*) Revised Forecast of Sugar Production for the 1934–35 Sugar Campaign.
(*g*) Preliminary compilation of Sugar Production for the 1934–35 campaign.
(*h*) Report on the College of Agriculture for 1933.
(*i*) Fourth Annual Report of the Sugarcane Research Station for 1933.

The following articles from Officers of this Department were published in the Revue Agricole.

1. Récoltes et Rendements by M. Kœnig and P. de Sornay.

2. Contribution de la Station des Recherches du Departement d'Agriculture by N. Craig.

3. Un resumé d'essais de variétés de canne de 1931 à 1933 by A. Glendon Hill.

4. Production sucrière de l'année 1933 et commentaires sur les résultats obtenus by M. Kœnig,

5. Etudes sur l'assimilabilité les phosphates dans les sols de Maurice by N. Craig.

6. Valeur comparée du fumier et des engrais chimiques by P. Halais.

7. La Polarisation du sucre roux by R. Avice.

8. Le dosage des cendres par la méthode électrométrique by R. Avice.

9. Quelques notes sur le Chaulmoogra by R. Lincoln.

10. Notes sur les principaux insects nuisibles à la canne à sucre by A. Moutia.

11. La sècheresse et ses effets sur la production sucrière de 1934 by M. Kœnig.

12. Guide pour la lutte contre quelques maladies de plantes by G. Orian.

General.

The Director of Agriculture served as a member of the Council of Government. He acted as Chairman of the Agricultural College Board, the Phytalus Advisory Committee, the Registration of Agricultural Chemists Committee, the Tobacco Board, the Allotments Organisation Committee and the Pineapple Committee. He also served on the following Boards and Committees :—the Board of the Mauritius Institute, the Forest Board, the Mauritius Hemp Producers' Syndicate (Executive Committee), the Stock Breeders' Association, the Finance Committee and the Fisheries Permanent Advisory Committee.

MEAN MONTHLY RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT THE STATIONS UNDER THE CONTROL OF THE DEPARTMENT OF AGRICULTURE, MAURITIUS

Stations	Central Experiment Station. Réduit								Barkly Experiment Station Beau Bassin					Abercrombie Nursery Port Louis					Botanical Gardens Curepipe		Botanical Gardens Pamplemousses	
Elements	Air Temperature			Relative Humidity	Rainfall		Sunshine		Temperature		Relative Humidity	Rainfall		Temperature		Relative Humidity	Rainfall		Rainfall		Rainfall	
Months 1934	Max. °C	Min. °C	Mean °C	%	Depth of rain mm.	No. of days	Hours	% of possible	Max. °C	Min. °C	%	Depth of rain mm.	No. of days	Max. °C	Min. °C	%	Depth of rain mm.	No. of days	Depth of rain mm.	No. of days	Depth of Rain mm.	No. of Days
January ...	27.7	21.2	23.8	67.6	275.6	21	243.9	59.9	29.2	21.8	65.9	204.5	16	31.4	23.2	58.7	205.0	20	604.2	29	293.8	25
February ...	28.0	20.9	23.9	66.3	40.4	21	279.6	70.9	29.5	21.5	62.4	8.8	12	31.1	23.8	58.2	20.5	18	122.5	28	68.0	20
March ...	27.7	20.7	23.6	68.4	59.1	24	279.5	74.1	29.3	21.3	64.6	28.5	15	31.3	23.9	57.8	53.9	17	187.0	31	92.2	22
April ...	27.0	19.6	22.5	68.6	36.4	22	250.5	72.0	28.7	20.5	65.4	18.2	15	30.5	23.2	61.4	15.4	9	109.0	29	75.3	13
May ...	24.4	18.7	20.9	76.0	170.2	28	189.5	54.9	25.8	18.9	76.2	131.7	26	27.5	21.0	69.5	190.0	27	380.3	31	345.2	28
June ...	21.8	16.1	18.5	72.9	84.4	28	229.3	70.1	23.9	16.2	75.7	53.6	21	25.6	18.5	62.3	59.5	19	321.0	30	127.5	20
July ...	21.6	15.0	18.0	70.2	46.0	28	215.3	63.1	23.2	15.4	72.5	22.5	18	25.7	17.7	62.2	22.5	17	169.0	30	58.0	21
August ...	20.7	14.7	17.6	72.4	56.8	22	250.6	70.9	22.9	14.7	66.5	39.1	20	25.1	18.6	60.5	41.6	19	247.2	30	105.0	23
September ...	21.7	15.5	18.3	70.1	56.6	23	168.9	47.4	23.8	16.1	63.9	31.9	20	25.9	18.6	62.3	73.1	24	201.8	28	109.5	23
October ...	23.6	15.7	19.5	63.1	23.2	21	259.6	66.9	25.8	16.4	59.6	11.7	11	27.5	19.4	55.7	21.2	13	118.8	28	42.2	16
November ...	25.9	18.6	21.8	65.0	162.2	17	211.6	54.3	27.3	19.2	63.3	159.8	16	29.7	20.4	58.1	117.2	11	237.8	27	212.8	13
December ...	27.3	21.4	24.0	69.5	81.1	19	261.2	63.5	29.0	21.7	64.7	61.5	12	31.3	23.3	57.2	19.4	10	139.8	27	42.5	15
Means ...	24.8	18.3	21.0	69.2	1,092.0	274	2,839.5	64.5	26.5	18.6	66.7	771.8	202	28.6	21.0	60.3	839.3	204	2838.4	348	1572.0	239
					Totals							Totals					Totals		Totals			

REMARKS.—Air temperature at Réduit is obtained from hourly measurement of thermograms standardized daily at 9 h and 15 h. Relative humidity is obtained from observations of dry and wet bulb thermometers at 9 h. and 15 h. Sunshine from a Campbell-Stokes Sunshine recorder. Rainfall is measured daily at 7 h. At other stations, maximum and minimum dry and wet bulb thermometers are read daily at 9 h. and 15 h. and rainfall measured at 7 h.